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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/612,563

07/02/2003

Toshiaki Watanabe

S004-5059

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01/28/2005

ADAMS & WILKS

31st Floor

50 Broadway

New York, NY 10004

EXAMINER

VO, ANH T N

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 01/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/612,563

Applicant(s)

WATANABE, TOSHIAKI

Examiner

Anh t.n Vo

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

FINAL REJECTIONS

Response to Applicant's Amendment

CLAIM REJECTIONS

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-27 are rejected under 35 USC 103 (a) as being unpatentable over Hirose et al. (US Pat. 6,120,140) in view of the applicant's submitted prior art (as shown in Figure 11).

Hirose et al disclose in Figures 1-14(b) an ink jet recording apparatus comprising:

- a plurality of grooves (not shown) each connected to a nozzle aperture (43);
- a common ink chamber (a chamber that is communicated to the nozzles through the grooves) to which each of the grooves is connected;
- ink storing means (41) for storing ink;
- an ink flow path (L1-L4) that connects the common ink chamber and the ink storing means (41) to each other (Figs 9-10);
- a filter (1 or 46) that is disposed in a portion of the ink flow path (L1-L4) to divide an ink reservoir into an upstream side (a side that is opposite with element L3 or B direction) and a downstream side (L3) by forming mutually opposing partitions (47) before and after the filter (46) in the ink flow path (L1-L4);

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- an ink flow substrate (L1-L5) that connects the common ink chamber and the ink storing means (41), at least portions of ink flow path being formed in the flow path substrate (l1-L4) (Figs 9-10);
- the grooves (not shown but each connected to a nozzle aperture 43) and the filter (1 or 46) are arranged in parallel direction (Fig. 9) and/or in perpendicular direction (Fig. 3);
- one end side (44a) of a tubular communicating passage (L1), of which the other end is connected to the ink storing means (41), is connected to a side opposite to that of the upstream space of the ink introduction passage (L2) (Figs. 9-10);
- wherein: the filter (46) is disposed in a vertical direction and/or horizontal direction and/or inclined direction (Figs 2a-7b and 9-12);
- the ink introduction passage (L2) is connected to a lower portion side in a vertical direction of the upstream space (B direction); and the ink supply passage (L4) is connected to an upper portion side in a vertical direction (Figure 10);
- wherein: the dimensions of the ink introduction passage (L2), the ink supply passage (L4), the upstream space (B direction), and the downstream space (L3) in the thickness direction of the thin plate shaped spaces are substantially identical to one another or less than 1.0 mm (Figures 6 and 9-10); and
- wherein: the ink supply passage (47b) is connected to the common ink chamber with one end side, opposite to the other end side that is connected to the downstream space, so as to be inclined downward in the vertical direction by a predetermined amount (Figure 11).

However, Hirosawa et al. do not disclose a substrate having a plurality of grooves each for receiving ink and extending along a longitudinal direction; a nozzle plate connected to the substrate and having a plurality of nozzle apertures each disposed with respective ones of the grooves; an ink chamber plate connected to the substrate to define with the partition walls an ink chamber for supplying ink from the ink storing means to the grooves.

Nevertheless, the applicant's submitted prior art (as shown in Figure 11) disclose an ink jet head comprising:

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- a substrate having a plurality of grooves (112) each for receiving ink and extending along a longitudinal direction;
- a nozzle plate (121) connected to the substrate and having a plurality of nozzle apertures (122) each disposed with respective ones of the grooves (112);
- an ink chamber plate (116) connected to the substrate to define with the partition walls (113), an ink chamber (115) for supplying ink from the ink storing means (an ink container can connect to a tube 117 to supply ink to ink chamber 115 but the ink container do not show) to the grooves (112).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of the applicant's admitted prior art in the Hirosawa et al. ink supplying apparatus for the purpose of providing an ink jet head receiving ink from an ink container.

Hirosawa et al. in view of the applicant's admitted prior art disclose the claimed invention except for "dimensions of the ink introduction passage (L2), the ink supply passage (L4), the upstream space (B direction), and the downstream space (L3) having a thickness smaller than an inner diameter of the tubular communicating passage (L1)". It would have been obvious to one having ordinary skill in the art at the time the invention was made to select changes in the dimension of the ink flow passage for the purpose of removing effectively bubbles so that the ink is consistently and stably ejected, since it is a mechanical design expedient for an engineer depending upon a particular environment and the applications in which the ink jet recording apparatus is to be used.

Response to Applicant's Arguments

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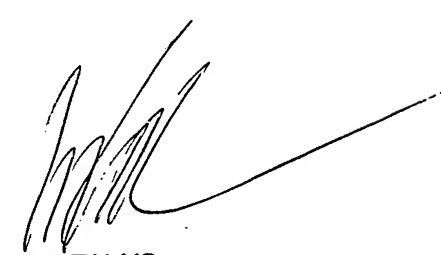
The applicant argue that Hirosawa does not disclose or suggest the specific flow passage recited in independent claims which requires a tubular communicating passage, an ink introduction passage, and an ink supply passage which is inclined downwardly relative to a horizontal line disposed generally parallel to the flow direction of ink in the ink introduction passage and each of the ink introduction passage, the ink supply passage, the upstream space, and the downstream space has a thickness smaller than an inner diameter of the tubular communicating passage. The argument is not persuasive because theses limitations are disclosed in the Hirosawa et al. reference as discussed above.

CONCLUSION

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo whose telephone number is (571) 272-2262. The examiner can normally be reached on Tuesday to Friday from 9:00 A.M. to 7:00 P.M..

The fax number of this Group 2800 is (703) 872-9306.



ANH T.N. VO
PRIMARY EXAMINER
January 26, 2005